From:	POULSEN Mike
To:	Eric Blischke/R10/USEPA/US@EPA
Cc:	ANDERSON Jim M; Chip Humphrey/R10/USEPA/US@EPA; Dana Davoli/R10/USEPA/US@EPA; FARRER David G; lavellejm@cdm.com
Subject:	RE: Portland Harbor breastfeeding risk
Date:	02/19/2008 02:48 PM
Attachments:	PH breastmilk risk 2.xls

Eric -

You are correct; it is the averaging over 70 years for carcinogens, and not for noncarcinogens, that makes for the big difference. The breastfeeding child gets a large dose for a short time (1 year), but we are essentially saying that it is only the dose and not the duration that matters (assuming the duration is sufficiently long enough - and we do not have a good sense of what is a sufficiently long time for noncarcinogens).

If the breastfed child grows up and consumes contaminated fish for 30 years at the same rate as the mother, the cancer risk would be the sum of the mother and infant risks. Since the cancer risks for the mother and infant are about equal, this amounts to doubling the risk. So this would not result in as large a difference as the noncancer risks.

One of the issues we are grappling with is the appropriateness of calculating an HQ for exposure less than a lifetime, or at least less than 6 or 7 years. Dana showed me some calculations from another site where they looked at combined exposure from 1 year of breastfeeding and 6 years of child exposure. I've added the calculations to the attached spreadsheet. In making this addition, I thought it was best to change nomenclature, and now call the breastfeeding child an "infant", and use "child" to refer to ages 1 to 7 following breastfeeding.

The cancer risk for the combined infant+child goes up a bit. More interesting is the HQ for the infant+child is now very close to the HQ for the mother.

I've discussed with the toxes that I'm concerned this approach moves us a step away from the real issue. If we are concerned that calculating an HQ for only one year of breastfeeding is too short an averaging period, then let's see if it is appropriate to divide by 7 years (or whatever). That's really what we end up doing by adding in child exposure because the contribution to risk from a child eating contaminated fish is not great. Or we should at least be clear that the averaging time (if included) for noncarcinogens is the key issue. I have not seen a resolution from EPA or anyone else on this issue. Although, in our PH memo on breastfeeding, I did quote EPA saying that it was appropriate to apply the RfD to one year of exposure given the potential sensitivity of infants to adverse health effects.

- Mike

-----Original Message-----
From: Blischke.Eric@epamail.epa.gov
[mailto:Blischke.Eric@epamail.epa.gov]
Sent: Thursday, February 14, 2008 10:23 PM
To: POULSEN Mike
Cc: ANDERSON Jim M; Humphrey.Chip@epamail.epa.gov;
Davoli.Dana@epamail.epa.gov; FARRER David G; lavellejm@cdm.com
Subject: Re: Portland Harbor breastfeeding risk

So Mike, why is it that there is such a difference between the non carcinogenic and carcinogenic risk for the child relative to the mother? Is this because the carcinogenic risk to the child is averaged out over 70 years while the non-carcinogenic risks are not? What would happen if the child breast fed for a year and then began to eat fish at an appropriate subsistence rate and over a similar length of time as the mother? Would we see the same differential as we see for NC risk?

Eric

"POULSEN Mike"
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02/14/2008 04:26 PM

To
Dana Davoli/R10/USEPA/US@EPA,
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cc
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Subject
Portland Harbor breastfeeding risk

Here's a draft spreadsheet showing the calculated risks to children from breastfeeding, assuming subsistence consumption by the mother of smallmouth bass in Portland Harbor. The risk drivers are PCBs. My other point is that there is also substantial risk to the mother from consuming large amounts of contaminated fish.

- Mike[attachment "PH breastmilk risk.xls" deleted by Eric Blischke/R10/USEPA/US]